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Semileptonic form factors for exclusive $B_s \rightarrow K\ell\nu$ decays

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Heavy-light semileptonic decays provide an important channel to perform high-energy precision tests of the standard model, determine $|V_{ub}|$, and test lepton flavour universality. In this talk, the current status of exclusive $B_s \rightarrow K\ell\nu$ semileptonic decays within the RBC-UKQCD Relativistic Heavy Quark (RHQ) project will be presented. We will present recently-published form factor results for $B_s \rightarrow K\ell\nu$ and discuss key findings. Combining our results with experimental data yields $|V_{ub}| = 3.8(6) \times 10^{-3}$, which is dominated by experimental error. The next phase of this work is the inclusion of a physical-point ensemble to more strongly constrain the chiral-continuum behaviour, which will also be particularly important for improving our analysis of $B \rightarrow \pi\ell\nu$. Additionally, a modified form factor fit ansatz will be presented, which potentially gives stronger constraints on excited-state contributions.

Topical area

Quark and Lepton Flavor Physics

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